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ABSTRACT

A series of eight videoconferences was designed to help educational professionals improve schools by applying knowledge gained from research. During the videoconference programs, which are transmitted by satellite to facilities with receiving capacity, viewers can interact by telephone with the program presenters. Each program covers a specific topic and each has a "content partner" (a learning center, institute, teachers' association or other group) that supplies expertise in the program area. The format of the program involves the presentation of two stories depicting classrooms or communities that have successfully integrated research with practice, and a question-and-answer session with the studio audience and remote viewers. In this document, a review of research on the transition from school to work is followed by an overview of the seventh program in the series, which covers the topic of preparing students to enter the work force. In this program, the first story describes the implementation of a program in Appleton, Wisconsin, which is designed to provide students with academic knowledge and technical skills to broaden their occupational options. The second story illustrates the use of the efficacy approach, a set of principles designed to develop confidence and a work ethic in individuals. This story shows the implementation of these principles in schools in Detroit, and a training session in Chicago for volunteers who use the efficacy approach to help students. A series of follow-up activities relevant to the topic of preparing students to enter the work force is described. Additional materials include biographical information on videoconference participants, a list of resources on school-to-work transition, a glossary of terms, and a reference list of 38 items. (BC)

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SCHOOLS THAT WORK
The Research Advantage

GUIDEBOOK

7

Preparing Students for Work in the 21st Century

PS 020830

An Eight-Program Videoconference

presented by the
North Central Regional Educational Laboratory
and the PBS Elementary/Secondary Service
in partnership with the
Institute on Education and the Economy
Teachers College, Columbia University

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NCREL

The North Central Regional Educational Laboratory (NCREL) is one of ten federally supported regional educational laboratories in the country and serves the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin. NCREL works with education professionals in the region to support school restructuring to promote learning for all students, especially those most at risk of academic failure in the most rural and urban settings.

NCREL was created in 1984 by seven chief state school officers and 19 deans of education from colleges and universities. It is governed by a 29-member board of directors composed of the seven chief state school officers and representatives from higher education, business, labor, agriculture, local and intermediate educational agencies, and communities.

The Lab's efforts to respond to regional needs are focused around five major program areas which direct our efforts to those in greatest need and allow us to concentrate our resources in areas likely to result in the greatest impact: curriculum, instruction, and assessment; early childhood and family education; professional development; rural education; and urban education.

As an educational laboratory, NCREL assists schools, families, and communities in identifying and addressing the needs of our children and students and in redesigning schools so that they have a greater capacity to create learning environments appropriate to, and supportive of, the full diversity of student needs and circumstances. We believe a growing body of expertise embodied in theory, research, and practice is pointing toward ways in which the nation can fundamentally rethink, or restructure, its schools.

PBS

The PBS Elementary/Secondary Service (ESS), through and on behalf of PBS member stations, serves the instructional needs of students and teachers nationwide. ESS distributes educational programming and related materials for K-12 classroom use; promotes the use of PBS's primetime programming as a curricular resource; provides professional development for educators; and serves as a national advocate for the use of video and related technologies for learning.

The PBS Adult Learning Service (ALS) offers college-credit television courses through local partnerships of public television stations and colleges. Since 1981, more than 1,500 colleges, in cooperation with 300 public television stations, have enrolled more than one million students in ALS-distributed courses. In August 1988, ALS launched the PBS Adult Learning Satellite Service (ALSS) as a direct satellite service for higher education, offering a wide variety of programming.

Institute on Education and the Economy, Teachers College, Columbia University

The Institute on Education and the Economy, Teachers College, Columbia University, conducts research and policy analysis and provides intellectual leadership on the implications of changes in the economy and labor markets for all levels of our education and training systems. Specifically, the Institute examines:

- The skill requirements resulting from changes in the nature of work
- Formal and informal learning in the workplace
- Strategies and recommendations regarding what is taught in our schools, to whom, when, and how

The Institute attempts to impact educational policies and programs at the local, state, and national levels. Institute research findings and policy recommendations are communicated through technical and nontechnical publications, the press, conference participation, and meetings with related professionals. A number of professional organizations and policy centers act as Institute associates who provide advice and networks for communicating Institute research to educators, government officials, business and industry leaders, and the public.

For more information on the Institute and its activities call (212) 678-3091, or write:

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What is a Videoconference?

The North Central Regional Educational Laboratory (NCREL) and the PBS Elementary/Secondary Service have been producing videoconferences together since 1987. Via satellite, videoconferencing allows the exchange of information across town or across the country. A growing number of organizations use this delivery system for staff development, corporate meetings, training sessions, and entertainment events.

Videoconferencing works like this: An "uplink" station transmits the live program to a communications satellite which then beams it to "downlink" sites. Any facility with a satellite dish and the proper receiving capacity can be a downlink site. When combined with a telephone hookup, videoconferencing becomes "interactive" with one-way video (viewers see the presenters on monitors although presenters cannot see the viewers) and two-way audio (viewers can call in and speak to the presenters). Another way to include an interactive component is to have a viewer call-in period following the live satellite transmission.

In 1990, NCREL and PBS produced a nine-part staff development videoconference series, *Restructuring to Promote Learning in America's Schools*. Although not geared specifically toward staff development, *Schools That Work: The Research* Advantage has been designed to help viewers develop the kinds of successful schools that ensure a successful future for all of us.

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SECTION 1

Overview of the Videoconference Series

The President of the United States and the National Governors Association recently set forth six goals to be achieved by the year 2000 (see page 3). *Schools That Work: The Research Advantage* is designed to provide educational research for schools and communities as they reflect upon and seek to implement these national education goals. A recent Gallup poll shows that most Americans strongly support the national goals. Each goal was rated as a high priority by at least 84% of those polled. However, at least 47% felt that reaching these goals by the year 2000 is unlikely.

The North Central Regional Educational Laboratory and the PBS Elementary/Secondary Service are committed to restructuring schools to promote learning. We believe that every child can learn. We also believe that it is in our nation's utmost interest to develop world-class schools that achieve these goals, for the sake of our children.

Scattered throughout America are schools that work. These schools involve teachers, students, administrators, parents, community members, and businesses. They illustrate how the application of learning research can lead to improved education and to the achievement of the national goals. These examples give us hope that we all can make the difference. This videoconference is designed to help viewers develop schools that work, schools that aim to meet the national goals using the research advantage.

Topics and Schedule

1991 (4:00-5:00 pm ET)	**1992** (4:00-5:00 pm ET)
Reading—October 10	Early Childhood Education—February 13
Mathematics—October 24	Drug-Free Schools—March 12
Science—November 14	School-to-Work Transition—April 2
Assessment—November 21	Interagency Collaboration—May 7

Audience

Schools That Work: The Research Advantage is designed primarily for teachers, administrators, and curriculum specialists, as well as staff of state and intermediate education service agencies. However, its fast-paced, informative style will appeal to school board members, parents, policymakers, Chapter I staff, teacher educators and their students, test makers, staff developers, and researchers interested in school improvement.

Videoconference Programs

Videoconference 1

Reading ▪ October 10, 1991 ▪ Children as Strategic Readers

Content Partner: Center for the Study of Reading (CSR), University of Illinois, Urbana-Champaign

Videoconference 2

Mathematics ▪ October 24, 1991 ▪ Children as Problem Solvers

Content Partners: National Center for Research in Mathematical Sciences Education, University of Wisconsin, Madison, and the National Council of Teachers of Mathematics

Videoconference 3

Science ▪ November 14, 1991 ▪ Children as Explorers

Content Partners: Institute for Research on Teaching, Michigan State University, and Project 2061, American Association for the Advancement of Science (AAAS)

Videoconference 4

Assessment ▪ November 21, 1991 ▪ Alternatives for Measuring Performance

Content Partner: National Center for Research on Evaluation, Standards, and Student Testing (CRESST), UCLA

Videoconference 5

Early Childhood Education ▪ February 13, 1992 ▪ Meeting Children's Needs

Content Partners: National Association for the Education of Young Children (NAEYC) and the National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE)

Videoconference 6

Drug-Free Schools ▪ March 12, 1992 ▪ Preparing Students for Drug-Free Lifestyles

Content Partner: Midwest Regional Center for Drug-Free Schools and Communities

Videoconference 7

School-to-Work Transition ▪ April 2, 1992 ▪ Preparing Students for Work in the 21st Century

Content Partner: Institute on Education and the Economy, Teachers College, Columbia University

Videoconference 8

Interagency Collaboration ▪ May 7, 1992 ▪ Integrating Community Services

Content Partner: Study Group on School-Linked Integrated Services sponsored by the U.S. Department of Education and the Department of Health and Human Services

Videoconference Objectives

- To provide examples of how research empowers teachers, students, and whole communities
- To promote meaningful and self-directed learning for all students
- To focus national attention on issues of equity and excellence as schools and communities implement the national goals
- To demonstrate alternative ways that educators, parents, policymakers, and community members can work together to redesign schools for America's children
- To provide high-quality programming with up-to-date research for professional development libraries for educators
- To encourage schools and communities to reflect on the national education goals, well informed by the best of research and practice

The National Education Goals

Goal 1: By the year 2000, all children in America will start school ready to learn.

Goal 2: By the year 2000, the high school graduation rate will increase to at least 90 percent.

Goal 3: By the year 2000, American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

Goal 4: By the year 2000, U.S. students will be first in the world in science and mathematics achievement.

Goal 5: By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

Goal 6: By the year 2000, every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

Rationale for the Videoconference Program Topics

The topics for this series were selected in part because they represent major areas of educational research and in part because they are all relevant to the national education goals. Although each topic area in the series involves different departments and school staff, it is important to understand that schools ultimately are part of one system. What happens in one area of schooling influences what happens in another area. This videoconference series presents two sets of thematically related programs.

- The theme connecting the first four programs (Reading, Mathematics, Science, Assessment) is that research in these areas forms the vision of learning and teaching that drives curriculum, instruction, and assessment. Further, many common threads exist in each research base such as teaching for understanding and collaborative learning.
- The theme connecting the last four programs (Early Childhood Education, Drug Education, School-to-Work Transition, Interagency Collaboration) is that traditionally these topics have been considered somehow outside the core of schooling—both conceptually and politically. Our intent is to demonstrate that they are vital for the achievement of all children. Further, the collaborative learning and higher order thinking, together with their assessment, needed in the subject disciplines are also vital to early childhood education, preparing students for drug-free schools, and the work environment.

Accordingly, NCREL and PBS strongly recommend that schools and community members watch all eight programs to develop a common language and common objectives. Indeed, we hope that schools and community members will use this series as a vehicle for debate and reflection about school reform and implementing the national goals.

Format of Each Videoconference Program

Live Satellite Transmission (1 hour)

For educational research to have a positive impact on schooling, it must be supported by effective classroom practices. With this in mind, the satellite transmission portion of each videoconference will focus on two "stories" depicting actual classrooms or communities that have successfully integrated research into practice. Each story will be followed by a question-and-answer session with the live studio audience. Remote viewers will be able to call in at any time during the program and give their questions to the telephone operator. The moderator will ask selected questions to the presenters throughout the program. Questions not answered on the air may be answered by phone or in print.

The first story will demonstrate effective classroom practices. The second will portray the rich teaching and learning environment created through community involvement in schooling. Each program in the videoconference series draws upon the best of research and practice to address critical questions that schools and communities need to resolve if they are to implement the national goals. Specifically, each program will illustrate the following:

1. How research has changed an individual teacher and the lives of his/her students
2. How schools have used research in the community by involving parents or community members in planning, instruction, or assessment or have enabled teachers and students to engage in learning outside the traditional boundaries of the school

Participant Call-In (30 minutes)

Immediately following the satellite transmission of each videoconference, participants will be given the opportunity to "call in" with comments and questions for videoconference presenters. This segment does not include live video transmission. However, callers will speak directly to the presenters. Because this segment provides one-to-one contact between presenters and participants, it is the key to the interactive nature of the conferences.

SECTION 2

What Does Research Say About School-To-Work Transition?

Faced with a fast-changing job market through which there seems to be no discernible pathway to economic survival, many non-college-bound students fall through the cracks and find there is no "safety net." The reasons: (1) These students often are poorly prepared—or not prepared at all—for the jobs that exist. (2) There is no consistent policy framework nor are there programs that effectively facilitate their transition from school to work. As a result, most are left to their own devices. The effect on the individual is devastating and the economic results for society are inescapable. The situation is much worse when the student is poor, a minority, or a school dropout.

In the following sections we present:

- A description of the changes in the workplace
- Changes in demographics
- Important findings from cognitive science about how people learn
- An historical context of school-to-work educational and training programs
- Issues of equity in schools and the workplace
- Approaches to solutions

Major Changes That Have Impacted School-to-Work Transition

Changes in the Workplace

U.S. business dominated the world's markets during the 20th century through a mass production system designed to drive down the unit cost of standardized products. This system reduced training needs and insulated the production process from absenteeism and turnover. Key features included minimal worker control, limited worker discretion, high levels of inventory, sophisticated quality control systems, and specialized personnel. This type of system is most advantageous when products or services, production systems, and technologies rarely change.

However, in today's market, flexibility, fast response time, and innovation join cost as the keys to growth and competitiveness. Rather than a low-skill, high-control system, the new economic environment requires the integration of traditionally separate roles (such as design, engineering, marketing, manufacturing, etc.), flatter organizational hierarchies, decentralization of responsibility, and greater employee involvement at all levels. This rapidly evolving system is more responsive, flexible, and conducive to continuous innovation, but it requires workers with different, and

often, higher skills. The textile industry, described below, is an example of changes in the nature of work which typifies changes across the larger job market.

■ Textiles

In 1987, while modernizing one of its plants, a major denim manufacturer expanded the number of denim weaves and colors, increased its efforts to monitor and anticipate market changes, and moved toward a "Quick Response" system for filling orders. The consequent introduction of modern open-ended spinning machines overwhelmed the capacities of the firm's corps of fixers. Moreover, the manufacturer was unable to find workers—from inside the firm or from the local labor market—who were educationally prepared to learn the required skills. These skills included using calculators for basic mathematical calculations; calculating pressure, voltage, amperage, electrical resistance, and temperature through basic mathematical formulae; and determing acceptable tolerances of machine parts based on machine drawings. Only those with a background in mathematics were able to complete the necessary training.

Traditionally, mechanical skills garnered through experience on a farm or with automobiles were sufficient to enable a fixer to be successful. But the operation of the new looms could not be observed and, to fix them, the technicians (no longer fixers) had to be able to represent the looms' structures symbolically in their heads. They also had to follow complicated manuals, diagrams, and updates from the machine manufacturers. This shift is consistent with broader research on the educational effects of computerization which concludes that observational (visually-based) learning has been replaced by learning acquired primarily through symbols, whether verbal or mathematical.

■ Emerging Trends

Data from multiple research methodologies including case studies, broader statistical research relating education to economic change, occupational data, and studies of the changing wage structure all support the emerging picture that the information age workplace will have a rising demand for higher-skilled and more-educated workers. (Other shifts from mass production to the age of information are represented on page 9.) However, three unanswered questions remain:

- What is the rate of this change?
- How extensive is it across industries?
- How permanent is it?

Although the current trend is toward jobs that require higher-order thinking, low-skill jobs—such as those in food service or simple clerical jobs—still exist in abundance and will continue to be the only opportunities available to many first-time employees for some time to come. However, few of these jobs can be restructured to require middle-level skills, and it is unreasonable to expect the small businesses in which most of these jobs exist to offer the training necessary for individuals to become upwardly mobile.

Another problem with these entry-level jobs is that they do not provide the wages nor career paths necessary for young people to support and raise their families. Minimum wage, even in a two-income household, will barely pay the rent in today's economy. Little, if any, money is left for other needs such as adequate food, medical care, and transportation. Realizing the futility of these dead-end jobs, many workers become discouraged and resort to the welfare system. Increasingly, only middle-skill and higher-skill jobs pay wages that allow young people to begin and maintain a family.

Furthermore, acquiring the skills necessary for *one* job is not enough. If our educational objectives include giving individuals economic options, we must provide an education to prepare students for various types of jobs. All students need the knowledge and skills required for middle- and higher-skills jobs, whether or not they start their careers in jobs of this sort. Educators from K-12 must improve the transition from school to work by ensuring that high schoolers graduate with the skills and knowledge they need to complete additional training—in post-secondary or employer-sponsored programs.

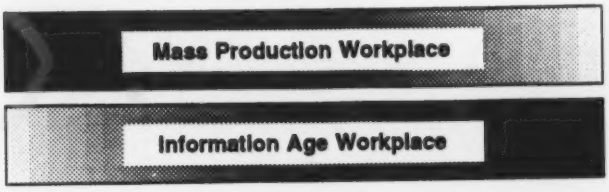
"We have produced large numbers of adults who have given up on their capacity to grow intellectually....Many are completely closed out of productive employment in the legitimate economy, and sink quickly into the underclass, with its underground economy of crime and drugs."

—Jeff Howard

Shifts in the Mass Production Workplace to the Information Age Workplace

Job Definition

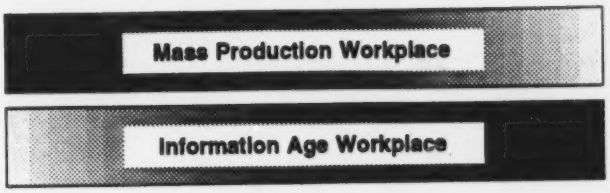
Narrowly defined jobs and tasks; requires minor responsibility



Comprehensive, open-ended jobs and tasks; requires high responsibility and critical thinking

Employee Supervision

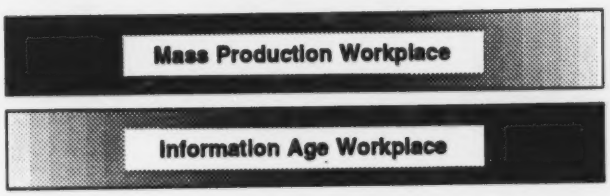
Heavy supervision; requires passive order taking



Little supervision; requires active individual initiative

Problem Solving

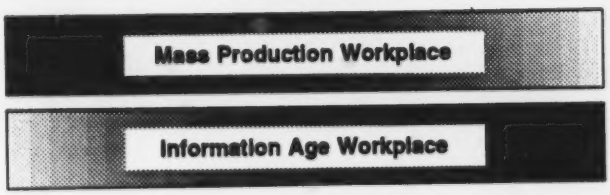
Specific responses to a limited number of possible problems; deviations handled by specialists



Creative solutions to increasingly non-routine situations; deviations handled by lowest level of specialist

Product/Process

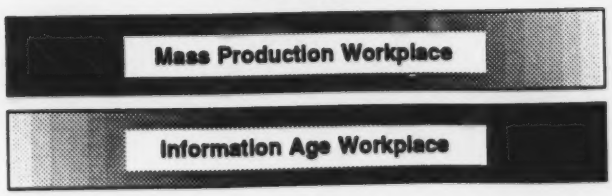
Completing tasks more important than continued improvement of performance



Improving process as important as improving product

Task Integration

Specific tasks are independent of purpose in overall operation



Work processes are integrated; increased ownership of product and process

Changes in Demographics

Long dependent upon a white, male work force for the bulk of its blue- and white-collar jobs, the business world is selecting workers from a much more diverse pool. Shortly after the year 2000, 83 percent of the United States' new workers will be a combination of women, minorities, and immigrants (Hodgkinson, 1988)--all groups that have been among the most underserved by our public education system. The implications are profound if such a large percentage of new workers continues to be underserved in our schools. Unless and until all students have access to the kind of education that historically has been available only to a small percentage, they will enter the work force ill prepared. In the future, business not only will continue to spend billions of dollars to train their employees in basic reading, writing, and math, but also will probably have to increase their training efforts to include the broad range of high-level cognitive and technical skills needed in today's changing work places.

What does this mean? This means that schools must provide for all what in the past has been available only to some, and that they also must provide the new skills required in the modern work world. At a time when economic trends are calling for highly skilled workers, it is imperative that **all** students have access to the education and training they will need to hold jobs that provide income adequate to support themselves and their families. New approaches that focus on bridging the gap between school and work must become part of the schooling agenda.

Changes in Beliefs about Intelligence and Development

Traditionally, we have conceptualized the learner as a passive recipient of knowledge transmitted from an identifiable source of information. Intelligence was static, comprehending was decoding, memory occurred through rote association of fragments of information, instruction provided opportunities to transmit bits of information and rehearse the relations, and assessment focused on documenting static components of intelligence and the acquisition of knowledge.

This model is based on the widely held belief that intelligence is an innate characteristic fixed at birth. This tacit structure of beliefs has several faulty assumptions according to recent research on intelligence:

- Intelligence levels fall along a bell curve in human populations; some individuals are highly intelligent, some are moderately intelligent, and some are not very bright
- It is possible to specify how much intelligence is needed to learn particular skills and concepts in school, and fulfill particular vocational or professional functions in adult life
- Standardized tests can measure the intelligence of children and then predict who will be able to master which skills and assume which functions

Traditional standardized tests are designed to maximize the differentiation between students, resulting in labels for different ability groups. Once labelled—"very smart," "sorta smart," and "kinda dumb"— the kids in the low group become victims of a self-fulfilling prophecy. They come to believe that they can't learn, make fewer attempts to learn, and eventually leave the educational process

that gives them no hope. In addition, those in the low groups generally are not provided sound instruction because of the belief that they cannot learn. This practice continues even though it has been shown that students in low groups continue to do worse while no significant advantage has been shown for the high groups.

Current research is changing our beliefs about intelligence. Now we understand that intelligence is dynamic and modifiable. It is possible to alter drastically the achievement not only of low-achieving students but also those with special problems. We also have learned that:

- Understanding is constructed by a learner's interaction with information within particular contexts
- Expertise requires rich, analytical experiences in diverse situations
- Retention and applicaiton require in-depth processing of information

Research on the nature of intelligence also yields new understandings about the capacity of the human mind. In the past, we thought that a child's intelligence consisted largely of cognitive skills, that cognitive capacity was limited to learning a few discrete items, and that innate intelligence was essentially unchangeable after the first years of life (e.g., Jenson, 1969). These views were consistent with behavioral psychology and the assembly-line model of schooling.

Today, many researchers and practitioners believe that intelligence is multi-faceted. For example, Howard Gardner, a cognitive psychologist from Harvard University, has developed a theory of multiple abilities, talents, and skills. Gardner argues that traditional schooling emphasizes only two abilities—verbal-linguistic (especially in written form) and logical-mathematical. Yet, there are many other kinds of knowledge or talents that enrich our lives and help us respond effectively to our environment. He lists the following, while emphasizing that there are many others:

- **Visual-spatial** Capacity to perceive the visual-spatial world accurately and to modify or manipulate one's initial perceptions
- **Bodily-kinesthetic** Ability to control one's body movements and to handle objects skillfully
- **Musical-rhythmical** Ability to produce and appreciate rhythm, pitch, and timbre, and appreciation of the forms of musical expressiveness
- **Interpersonal** Capacity to discern and respond appropriately to the moods, temperaments, motivations, and desires of other people
- **Intrapersonal** Knowledge of one's own feelings, strengths, weaknesses, desires, and the ability to draw upon this knowledge to guide behavior
- **Logical-mathematical** Ability to discern logical or numerical patterns and to handle long chains of reasoning.
- **Verbal-linguistic** Sensitivity to the sounds, rhythms, and meanings of words; sensitivity to the different functions of language

Brain research establishes and confirms that multiple, complex, and concrete experiences are essential for meaningful learning and teaching. People can and need to grasp the larger patterns because the part is always embedded in a whole, the fact is always embedded in multiple contexts, and a subject is always related to many other issues and subjects. The learners' overwhelming need is for meaningfulness. The brain is designed as a pattern detector, and understanding a subject results from perceiving relationships (Caine & Caine, 1991).

No one is suggesting that theory and abstractions not be taught. Indeed, the opposite is true. In our rapidly changing world culture, the more theoretical or conceptual the skill or understanding a person possesses, the more transferable and salable those skills become (Law, 1975). It is being suggested that students are more likely to understand the underlying theories and abstractions when their meaning is explored in the context of specific situations to which they apply.

Changes in the Contexts of Learning

Both vocational education ("learning to do") and its more academic counterpart, college-prep ("learning to know"), presuppose the acquisition of a set of basic skills before further education takes place. However, many people do not learn best through the traditional linear patterns used in most schools. For most, learning appears much more disorderly and complex (Raizen, 1989). In addition, those who study the brain and its implications for teaching and learning suggest that when education does not go beyond the typical memorization of facts and specific skills, we ignore much of our brain's innate capacity for learning (Caine & Caine, 1991).

From mathematics, reading, and science comes evidence that has contributed to a clearer understanding of how people learn. For example, many individuals who are able to acquire arithmetic skills and generate their own efficient paradigms to solve arithmetic problems in the work context—or in real life outside work—are unable to solve analogous problems posed to them in a formal schooling format (Bracey, 1989). Also, mathematics teaching characterized in formal schooling seems to overlook the importance of meaning, which lowers students' performance (Carraher, Carraher, & Schliemann, 1985).

In reading, marginally literate adults make greater gains in job-related reading when a meaningful context is provided for the text (Sticht, 1987). And in science, researchers have learned that even very young students bring to the classroom their own experiential knowledge about the workings of the world around them (Raizen, 1989).

Cognitive, anthropological, and brain research teach us that people learn differently through experience and on the job than they do in formal school settings. People also use what they know differently. Although these findings are not particularly surprising, historically schools have not taken these differences into account or granted legitimacy to learning that takes place outside their formal boundaries. Several inconsistencies between school and work settings are listed on page 13.

Inconsistencies Between Schools and the Real World
▪ Schools focus on individual performance; most non-school settings emphasize socially shared performance. ▪ The school model emphasizes unaided thought; work makes available and even requires the use of cognitive tools. ▪ Schools emphasize symbolic thinking to the exclusion of the objects and situations which aid formulation and solution in real life and at work. ▪ Schools attempt to inculcate general skills and knowledge; effective performance outside school focuses on situation-linked knowledge and skills. (Resnick, 1987)

Issues and Problems

Historical Context

Concern about the transition from school to work in America goes at least as far back as the Land Grant College movement of the mid-1800s. By 1900, the focus had shifted to the secondary schools. The most powerful criticism came from businessmen, industrialists, and educational leaders who contended that public secondary instructional programs were not useful in daily life nor did they contribute to success in future occupations.

Vocational education seemed to offer an answer to the embattled educators. When juxtaposed with the potent arguments that it would maximize economic efficiency and growth, increase upward social mobility, retain pupils in school longer, teach moral values inherent in the Protestant work ethic, and smooth the transition from school to work, the pressure for vocational education became almost irresistible (Lazerson & Grubb, 1974). Even then, however, there were those who rejected the narrow concept of vocational education they saw emerging (Dewey, 1915).

The events surrounding the implementation of vocational education after 1917 are the root cause of many of the systemic failures students face in the transition from school to work today. After the passage of the Smith-Hughes Act, the educational establishment ostensibly accepted the responsibility for vocational education. However, its implementation required no review or adaptation of the pedagogy of secondary school leaders (teachers, principals, superintendents, teacher educators, etc.). The result was educational "dualism" and the separation of the classes within a single student body—general education (college preparatory) for the elite and training (vocational education) for the "less able" masses. Over time, three pathways evolved: college preparatory (often called "the academics"), vocational education, and the general curriculum (which became the unfocused playground of the "neglected majority").

One can hypothesize that these early public school leaders saw vocational education as a quick and easy solution to the problem of "what to do with all these students who are not college material." It was then but a short step to "handing off" the responsibility for these students to vocational education. Thus was set, almost in stone, the separation of vocational and college preparatory education in American public education.

However, the past 30 years have witnessed several efforts to address this schism between academic and vocational education. When Dr. Sidney Marland's Career Education initiative came along in the 1970s, it was embraced by a surprisingly large number of vocational and non-vocational educators. In this and other less well known efforts, the idea emerged that vocational and academic courses should and could be integrated for the benefit of students—each time gaining additional interest and support from new and larger audiences.

During the sixties and early seventies, interest groups and agencies outside the traditional education establishment began to play an important role, particularly for those students who were being poorly served by the secondary school experience. The primary vehicles for this involvement included the Comprehensive Employment and Training Act (CETA) and the Jobs Training Partnership Act (JTPA). However, even with these increased resources and opportunities, the result was often more—rather than less—fragmentation of the transition process. Efforts to consolidate and coordinate these and other initiatives have met with less than resounding success.

By the mid-seventies, even the relatively powerful and, oftentimes, defensive state directors of vocational education were questioning their historic definition of "salable skills," the keystone of any school-to-work transition process. They concluded that true skill salability is a function of the mastery of a specific skill for job entry *and* the transferability of that skill for career stability. Their new vision reversed the trend toward specialization, with conceptual skills becoming more salable (Law, 1975). Their deliberations led to many of the comprehensive concepts of the 1990 Carl D. Perkins Vocational Education and Applied Technology Act.

In the early eighties, concerned educators began to address the artificial separation between vocational education programs in the secondary schools and their post-secondary technical education counterparts. However, few of the first efforts focused on the curricular aspects of the problem. Those with such a focus did not look beyond the connections between secondary and post-secondary vocational-technical education.

At the same time, there were visionaries who foresaw an academic and vocational education secondary/post-secondary "seamless garment" curriculum that facilitated students' transition from school to work. But the nation had only begun to examine the increasing difficulty of competing in a world marketplace, so the problem lacked its current urgency. By the early nineties, however, the previous initiatives began to evolve into the systemic educational restructuring strategy known as Technical Preparatory Education (Tech Prep) described in detail on page 17.

During the past three decades, cognitive scientists developed a clearer understanding of how people learn (Raizen, 1989). What they learned, particularly from the world of work, offers some exciting opportunities to those who are willing to look beyond the stereotypical boundaries of traditional educational institutions.

Evolution of Current School-to-Work Transition Strategies

	Socioeconomic Forces	System Response	Positive/Negative Results
1880	Acculturation of immigrants Competition with Germany for world markets	Vocational Education Comprehensive high school	+ Skilled workers for entry-level jobs - College Prep vs. Vocational Educ.
1960	Racial integration High dropout rate Increasing youth unemployment	Increased funds for vocational education; disadvantaged, disenfranchised emphasis Career Education CETA, JTPA initiatives	+ Identification, remediation of bias; more programs + Recognition, reduction of separatism + Increased job placements - More actors, more fragmentation
1980	Loss of domination of world markets Increasing dropout rates Increasing youth unemployment Recession	Secondary, post-secondary articulation Perkins Act of 1990 Tech Prep America 2000	+ Easier transition from secondary to post-secondary + Recognition of "neglected majority" + Integration of academic and vocational educ. + High profile; increased private sector, political involvement - Although improved, transition system remains incoherent, ineffective

Approaches to Solutions

In recent years, educators have employed many methods to bridge the gap between school and work—some more successful than others. Three promising approaches are described below. Tech Prep and the SCANS Report address the specific needs of schools and the workplace, while the Efficiacy Approach focuses on students' needs for confidence and self-directed learning.

Tech Prep: A Recent Effort To Connect Schooling To The Workplace

The term "Tech Prep" first appeared in the literature in 1985 and is short for technical preparation or technical preparatory education (Parnell, 1986). It is a secondary and post-secondary course of study that connects rigorous, high school academic and vocational courses with appropriate technology curricula. Tech Prep is academically equal to a college preparatory course of study designed to assist students make the transition from school to work through a coordinated secondary/post-secondary experience. Since its introduction, Tech Prep has been implemented in many school districts and was included as a major component of the Carl D. Perkins Vocational Technical Education Act of 1990.

Because Tech Prep requires radical configuration of the secondary school instructional and career guidance programs, it should be made an integral part of a school's comprehensive plan for educational and structural change—a major point that is not recognized by many practitioners. Thus, a properly conceptualized Tech Prep program will not become a separate entity at the secondary level, but will begin to erase the separation of vocational and academic education.

Without question, Tech Prep can open new doors for many students. Its emphasis on a rigorous course of study that leads directly to advanced courses at a cooperating post-secondary institution provides many students with a focus previously missing from their educational experience. Its focus on experiential learning in "real-world" contexts shows students the practical applications of their course content.

However, two major pitfalls threaten successful implementation of these programs: (1) the tendency for Tech Prep to remain separate from the "academic" curriculum of the high school and, in some cases, from the traditional vocational education courses, and (2) the lack of an explicit theoretical construct or set of educational principles to guide its design, implementation, and evaluation. Without the latter, it is impossible to overcome the former.

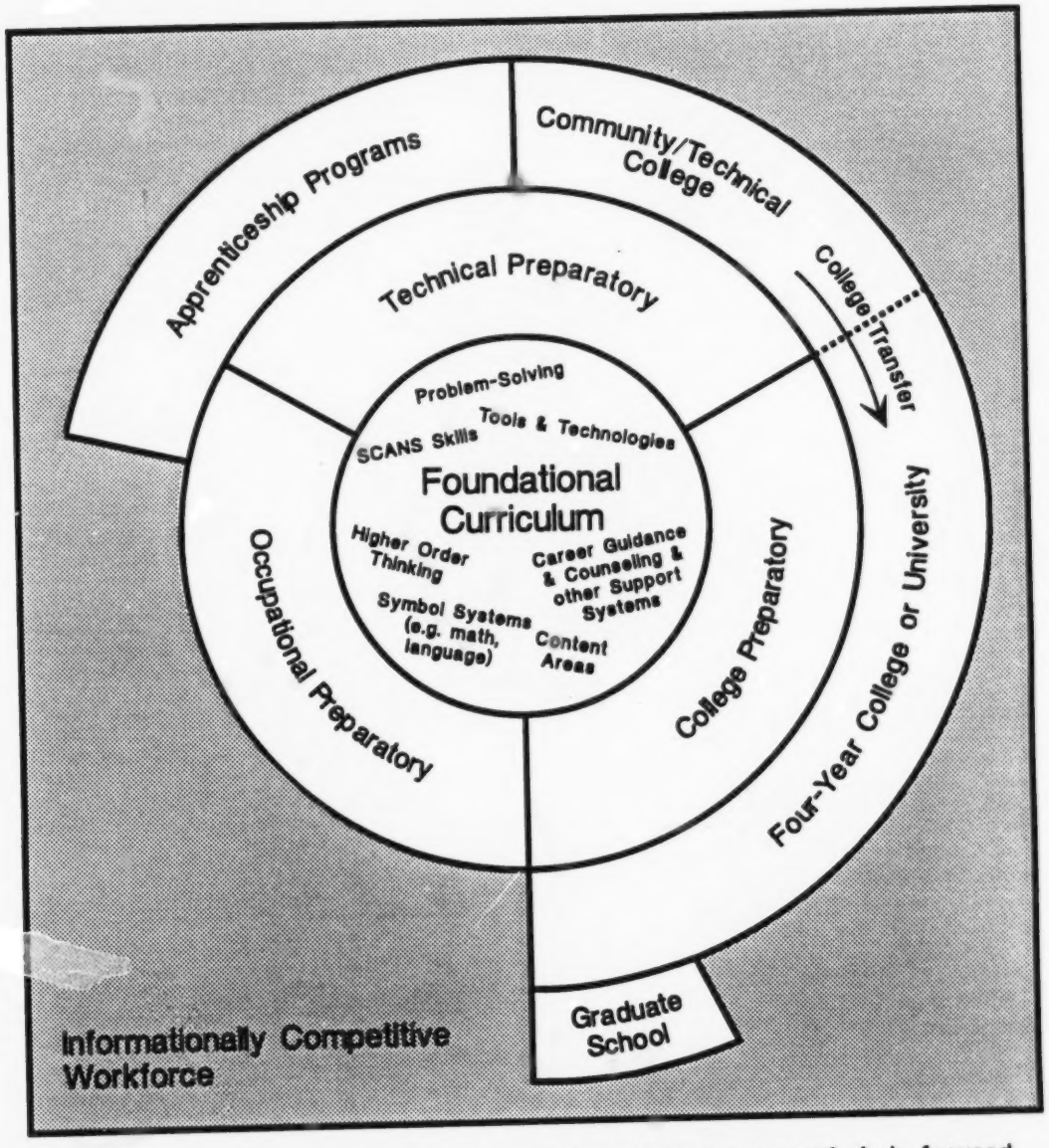
For a Tech Prep program to succeed, all participants must dig deeply into their conceptual understandings of education. They must identify and commit to a common set of beliefs about the nature of teaching and learning—whether it is called a philosophy of education, a set of educational principles, or a pedagogy. To reach this common philosophical ground, educators must understand the concepts or theories that undergird a Tech Prep education. Yet, these concepts are not defined in many of the models in use throughout the country, nor in the available Tech Prep literature. Furthermore, there has been no analysis of the pedagogical foundations of Tech Prep or its relationship to the constructs that drive most recent restructuring efforts.

In spite of this, local programs abound in ever-widening variety—much of their growth spurred by funds made available through the Perkins Act. Without a common conceptual foundation, these initiative—at their best—are likely to treat only symptoms rather than address real causal factors. At their worst, when some of the models fail (as some surely must), Tech Prep may lose its current lustre and be consigned to the educational junk heap along with other educational innovations that had poorly constructed conceptual foundations.

"Restructuring is the . . . call of the day. It will require the whole society to adjust the purpose of education and, yes, the whole society to gather around its own children."

—Herbert J. Grover
State Superintendent
Wisconsin Department of Public Instruction

The chart below is a visual depiction of existing curricular components. It is not complete and should not be considered a suggestion for curriculum design.



Occupational Preparatory: Sequenced, competency-based course of study focused primarily on attaining entry-level job skills through completion of an apprenticeship program

Technical Preparatory: Sequenced, academically-rigorous, competency-based course of study focused primarily on earning an associate's degree or completing an apprenticeship program prior to entering full-time employment

College Preparatory: Sequenced, academically-rigorous, competency-based course of study focused primarily on earning a bachelor's degree prior to entering full-time employment

SCANS Report

As the findings from cognitive science began to press educators toward more authentic tasks in real-world settings, a parallel effort was undertaken by the Secretary's Commission on Acquiring the Necessary Skills to identify what abilities workers need to make a smoother transition from school to work. The SCANS Report, developed by the Commission, was an attempt to identify the array of knowledge and skills students need to compete effectively for high-skill jobs.

The SCANS Report has argued explicitly that there are two important classes of skills and knowledge that are needed in the workplace: "foundation or tool skills" and "generic workplace competencies." (See tables, pages 19 and 20). The foundataion skills are instrumental to, but not the same as, the SCANS competencies, which are identified as a K-12 responsibility. Many people believe that the generic skills need to be supplemented with occupation specific competencies such as programming machine tools, operating radiographic equipment, and so on, to extend their usefulness.

SCANS Foundation (Tool) Skills

1. Basic Skills	2. Thinking Skills	3. Personal Qualities
▪ **Reading:** locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules	▪ **Creative Thinking:** generates new ideas	▪ **Responsibility:** exerts a high level of effort and perseveres towards goal attainment
▪ **Writing:** communicates thoughts, ideas, information, and messages in writing; creates documents such as letters, directions, manuals, reports, graphs, and flow charts	▪ **Decision Making:** specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses the best alternative	▪ **Self-Esteem:** believes in own self-worth and maintains a positive view of self
▪ **Arithmetic, Mathematics:** performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques	▪ **Problem Solving:** recognizes problems and devises and implements plan of action	▪ **Sociability:** demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings
▪ **Listening:** receives, attends to, interprets, and responds to verbal messages and other cues	▪ **Visualizing:** organizes, and processes symbols, pictures, graphs, objects, and other information	▪ **Self-Management:** assesses self accurately, sets personal goals, monitors progress, and exhibits self-control
▪ **Speaking:** organizes ideas and communicates orally	▪ **Knowing How to Learn:** uses efficient learning techniques to acquire and apply new knowledge and skills	▪ **Integrity/Honesty:** chooses ethical courses of action
	▪ **Reasoning:** discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem	

SCANS Generic Workplace Skills

1. Identifies, organizes, plans, and allocates **resources** including time, money, material, facilities, and human resources
2. Works with others (**interpersonal skills**) by participating as a member of a team, teaching others new skills, serving clients and customers, exercising leadership, negotiating, and working in a heterogeneous workplace
3. Acquires and uses **information** including skills of evaluation, organization, maintenance, interpretation, communication, and computer use
4. Understands complex social, organizational, and technological inter-relationships (**systems**) and works and operates effectively with them, monitors and corrects performance, and improves or designs them
5. Works with a variety of **technologies** including their selection, application to tasks, and maintenance and troubleshooting

The Efficacy Approach

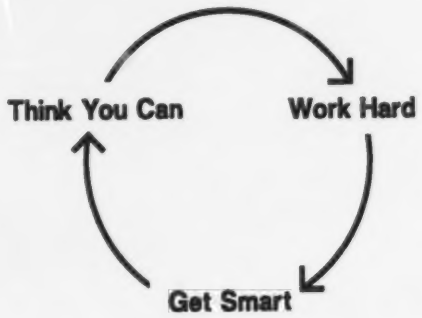
As America's dominance in the world marketplace begins to wane, we are faced with a highly competetive global ecomony that demands ever-increasing levels of literacy and problem-solving skills in its workers. However, our ability to produce an effective workforce for the 21st century is hindered primarily by our belief that only a small percentage of children are intelligent enough to be educated. This belief has a profoundly negative impact on our confidence in children—especially children of color—and causes us to ignore data which show that virtually all children can learn.

A new theory of development is clearly needed to address our educational deficits, and determine whether we will have a productive workforce in the 21st century. But will this shift be enough to ensure greater change in our society? Will major changes actually happen if we change the way we educate young people? They will, but only if there are shifts in all the other systems that lock the old paradigm in place. Reform must occur on a grand scale.

The Efficacy Approach represents a significant effort to help those students who have been particularly victimized through categorization. The basic tenant of this theory is that being smart isn't something you possess at birth, but is a process of development illustrated by this model:

Confidence —> Effective Effort —> Development

Because lack of confidence is at the core of the educational problems experienced by so many of our children, building confidence in their learning capacities is an essential part of the cure. Confidence generates positive attitudes toward development, engenders good feelings between teacher and student, energizes effort, and allows attention to focus on strategic approaches to the work of learning and teaching. This model is tailored to children and is understood best when presented this way:



Obviously, people are not born equally talented, or with the same talents. However, it is reasonable—and prudent—for us to assume that our children are endowed *enough* to achieve verbal and mathematical competence. Because they will live in a technological age and operate in an international economy, we must find a basis for believing in their intelligence and managing their development.

The Efficacy Approach builds on the notion that intelligence is constructed or built by the individual. It is an idea easily taught to young children:

> *"If you believe in yourself—if you 'think you can'—then you will be able to 'work hard' at what you are trying to learn. And if you really work, if you don't give up, you will learn. You will 'get smart.'"*

If the child understands that development comes from the expenditure of effort, then the child is in control—the decision about becoming smart is in his or her own hands. Children are empowered and energized by the notion that they can *choose* to get smart. Therefore, training students in the techniques associated with "getting smart" should be primary objective of early education—at home and at school.

In a new educational paradigm, the most important single factor controlling the learning capacity of children is a characteristic of adults: the ability to view development as a process that we have the power to manage. Taking responsibility for the development of children depends on willfully breaking the link—in our own minds—between a child's learning capacity and crude measures of intelligence. All children can learn if the process of learning is effectively organized and managed by adults.

The radical reform of our educational system will require several steps:

- A shift in our paradigms about intelligence
- A new, more aggressive set of objectives and standards for schools in the 21st century
- New policies and procedures in schools that are consistent with the new objectives and standards

None of these changes can realistically occur unless adults outside the traditional boundaries of education also participate in the process. It is well known—but rarely publicized—that most institutions in society operate on the old, innate ability model. Like educational institutions, they have pecking orders of intelligence, built in barriers for certain groups, and differential expectations that all result in mediocre products services. Thus, it is not just new employees who are having problems; our businesses, foundations, and religious institutions are not operating at optimal levels.

The point is, we have to work on these issues together—we are all involved. The decision about the transition from school to work must involve all adults concerned about the problem. Starting with a process that allows students to control and manage their intellectual abilities is a great way to take the first step in this area of reform.

"Smart is not something that you just are, smart is something that you can get."

—The Efficacy Approach

SECTION 3

Overview of Program 7: Preparing Students for Work in the 21st Century

Program Objectives

- To provide the major findings from research and practice in school-to-work transition
- To provide an example of excellence as illustrated in a Tech Prep program
- To raise the kinds of questions that might be discussed in school and community forums
- To stress the importance of developing confidence and work ethic in young children

Program Outline

- The program opens with comments from committed individuals that serve as a preview of key ideas.
- Moderator Judson Hixson, and Beau Fly Jones, Project Director for the videoconference series, both from the North Central Regional Educational Laboratory, introduce the videoconference series and Program 7.
- The first story describes a major curricular reform effort in Wisconsin to prepare students for work, and shows how the residents of Appleton, WI, are developing and implementing a communitywide Tech Prep program.
- Researchers Sue Berryman, of the Institute on Education and the Economy, and Charles Law, a noted Tech Prep advocate, discuss findings from research and the implications of Wisconsin's reform effort.
- Hixson moderates questions and comments from the audience.
- In the second story, Detroit's Public Schools put the efficacy principles to work in elementary classrooms, and business people from Chicago receive efficacy training from creator Jeff Howard.
- Berryman and Law discuss findings from research that support the principles of the Efficacy Approach.
- Hixson moderates more questions and comments from the audience.
- Special guests Richard Van Scotter and William Watts reflect on the discussion.

Overarching Message

- In a changing economy and wage structure, individuals cannot earn enough to form and maintain families.
- The information-age workplace requires highly skilled workers.
- Current educational systems are not preparing students for full participation in the workforce.
- Schools must provide opportunities for all students to become highly skilled.
- All children can learn 21st century skills and knowledge through confidence and hard work.
- To meet the challenges of the 21st century there needs to be a systemic connection between education and life roles including work and citizenship.

About Story 1: Tech Prep in Appleton, WI

In this story you will see and hear about extensive curricular reform in Wisconsin. Like many others, this state is making an effort to bridge the gap between its vocational education and college preparation curricula—which have had a long history separation—by developing a rigorous Tech Prep program. Their Tech Prep program is designed to provide students with academic knowledge as well as technical, real-world skills in order to broaden their occupational options after high school graduation.

One example of this reform is found in Appleton, Wisconsin, which has developed its own implementation of the Tech Prep concept. Four major groups—including school staff, parents and community members, representatives from business and industry, and staff from the state department of education—have united through their joint concern over the future of Appleton's youth. These groups are working together to provide students with the academic and work skills they need to make the transition from high school to workplace.

Their Tech Prep program was spurred by studies which indicated that:

- Local industries need fewer low-skilled and more high-skilled workers
- The types of skills required by most local businesses do not necessarily call for a college degree
- The average age of students in the local technical school is 28 years; many high school graduates are spending 5 to 10 years working in low-wage, non-career jobs before entering the technical school
- Too many students with only a general education are poorly equipped for the workforce

To address these problems, the Appleton schools and community have implemented a multi-faceted approach. Some components of their effort include:

- Technology education within the Tech Prep curriculum that provides rigorous coursework such as applied math, in conjunction with hands-on experience with high tech tasks and knowledge
- Family and consumer education, also part of the Tech Prep curriculum, that enables students to become self-sufficient members of society
- Co-op programs in which students attend school for part of the day and work in local business for the remaining portion to gain "real-world" work skills
- Dual credit courses in which students engage in academically and technically challenging lessons as they earn credit at both the high school and technical college
- Tech Prep courses in which regular and special education students team up to help each other prepare for life in the 21st century

The Tech Prep effort in Appleton has generated interest and gained involvement from every segment of the community. For example, the local Chamber of Commerce has worked with school staff to define curricula. In addition, the junior high school hosts a Technology/Career Fair which provides many local businesses and industries the opportunity to inform students about their companies, jobs, work-related technology, and workplace skills. While still in its infancy, this effort already has come a long way in addressing the school-to-work transition problems that students, schools, and businesses are facing.

About Story 2: The Efficacy Approach

Entering into life after school—whether a student decides to go directly into the workforce, a technical college, an apprenticeship, or higher education—requires the development of both academic and personal knowledge. In fact, the development of one influences the development of the other. The Efficacy Approach helps children develop confidence and a work ethic so that they can obtain the high level of knowledge and skills that jobs in the 21st century will require. In this story you will see two components of the Efficacy Approach.

The first part of the story shows teachers and students in Detroit learning and using the Efficacy Approach in their classrooms. It shows a group of first graders learning efficacy principles by reading stories, a third grade class discovering their "Learning Zone," and a fifth grade class in which the principles of the approach are infused into the curriculum. In addition, recently trained teachers discuss how they plan to infuse efficacy principles into their content teaching. Students, teachers, and administrators tell how their lives have been changed by the approach. And finally, the story shows how business and community volunteers go into classrooms, on their own time, to help children gain self-esteem and confidence by acting as role models.

These activities and stories illustrate the principles of the Efficacy Approach:

- Smart is not something you are, smart is something you *get*
- Thought determines action
- Think you can—Work hard—Get smart
- The "Learning Zone" is where you get smart
- Feedback tells where your Learning Zone is and how hard you have to work
- In everything you do Find Out How Good You Can Be (FOHGYCB)
- The Step-by-Step method is a way of working hard to get better
- Use feedback! Work hard! Think you can! Keep moving out!
- Overcome internal and external obstacles
- Listen to your strong side and make it powerful

The second part of the story shows employees of the Harris Bank in Chicago receiving training in the Efficacy Approach from its creator, Jeff Howard. As in Detroit, these employees show a genuine commitment to the future of young people by giving their time and effort to understand the approach and to actively help out in schools. In fact, the volunteer component is one of the most outstanding features of the approach.

Throughout the story, Jeff Howard discusses the importance of the Efficacy Approach for all children. For example, he emphasizes that school and community assumptions about intelligence must change if all children are to receive the education they need and deserve. Two false assumptions—believing that intelligence is fixed at birth and that we can measure it accurately with standardized tests—promote the labelling of students into "ability" groups that will determine, for better or, more often, for worse their educational and work opportunities.

Viewers' Guide for Program 7, "Preparing Students for Work in the 21st Century"

Things to look for during the program . . .	Spaces for taking notes
How do the presenters define intelligence and how does it relate to the larger issue of school-to-work transition?	
List the goals and components of the Tech Prep program found in Appleton, Wisconsin.	
Who participates, both in and out of school, in school-to-work transition programs for students?	
How are issues of equity addressed by the school-to-work transition programs?	
What is necessary at the national, state, and local levels for school-to-work transition programs to work?	
What knowledge, skills, and dispositions do information-age workers need to possess?	
How do the ideas presented in this program address the national goals?	

SECTION 4

Follow-Up Activities for Participants

Activities for Teachers

The examples of excellence in this program clearly show that in successful schools, teaching is a multidimensional activity. One of the most powerful of these dimensions is that of "teacher as researcher." Not only do teachers need to use research in their practice, they need to participate in "action" research in which they are always engaging in investigation and striving for improved learning. The key to action research is to pose a question or goal, and then design actions and evaluate progress in a systematic, cyclical fashion as the means are carried out. Below are five major ways that you can become involved as an action researcher.

1. Use the checklist found at the end of this section to evaluate your school's school-to-work transition strategies and programs.

2. Implement the models of excellence presented in this program. Ask yourself:
   - What outcomes do the teachers in this program accomplish that I want my students to achieve?
   - How can I find out more about their classrooms and schools?
   - Which ideas can I most easily implement in my classroom and school?
   - What will I need from my school and community?
   - How can I evaluate progress?
   - How can I address issues of cultural diversity and bias?

3. Form a team and initiate a research project. A research project can be designed to generate working solutions to a problem. The issues for your research group to address are:
   - What is the problem or question we wish to solve?
   - What will be our approach?
   - How will we assess the effectiveness of our approach?
   - What is the time frame for working on this project?
   - What resources do we have available?
   - What outcomes do we expect to achieve?

4. Investigate community needs and integrate solutions within your class activities. Relevant questions include:
   - How can the community assist in the learning process?
   - What is the community's vision of learning that defines what should be learned by students and workers?
   - How will the community benefit from improved school-to-work transition for students?
   - What kind of relationships can my class and school forge with the community?

5. Establish support groups consisting of school personnel and community members. The goals of these groups are to:
   - Share teaching and learning experiences both in and out of school
   - Discuss research and theory related to learning and work
   - Act as mentors and coaches for one another
   - Connect goals of the community with goals of the school

Activities for Schools, Parents, and Community Members

The following are activities that groups such as your PTA, church, and local Chamber of Commerce and business and industry can do together with your schools.

1. Visit your school informally for discussions using the checklist on page 31.

2. Consider ways that schools and community members can work together to provide:
   - Materials for a rich learning environment (e.g., real literature in print and audio form, computers) in which authentic tasks can occur
   - Opportunities for students and teachers to learn outside of school
   - Opportunities for students to access adults as role models, tutors, aides, and experts as they engage in work and learning tasks
   - Opportunities for students to provide community services such as surveys, newsletters, plays, and tutoring
   - Opportunities for students to participate in community and business affairs
   - Opportunities for administrators, teachers, or students to visit managers and company executives to learn what skills are important in the "real" world
   - Opportunities for students to investigate local businesses, industries, and services to familiarize themselves with jobs and work environments
   - Opportunities for local business people to share career paths with students

3. Promote school and community forums to debate the national education goals:
   - Invite your local television and radio stations to host school and community forums.
   - Have "revolving school/community breakfasts" (community members visit schools for breakfast once or twice a month, changing the staff and community members each time).
   - Gather information on the national education goals and their assessment.
   - Gather information on alternative models of schooling and work.
   - Gather information on best practices and research in the classroom.

Some of the important questions and issues to discuss in your forums are:

- Have we reviewed the national education goals documents to arrive at a common understanding of each goal?
- What will students be like who learn in schools that achieve the goals?
- What must schools be like to achieve the goals?
- Do we agree with the goals, and how high do we rate each?
- What is the reason for national pessimism about their achievement?
- How are our schools doing now in terms of achieving each?
- Why is it important for us to achieve the goals?
- What are the consequences for our community if we don't achieve them?
- What assumptions are we making about the future in terms of Knowledge, Technology and Science, Humanities, Family, Change, Population, Minority Groups, Ecology, Jobs, Global Society, and Social Responsibility? Discuss in terms of each of the goal areas.

4. Consider ways to use this program guidebook, *Preparing Students for Work in the 21st Century,* to promote understanding and commitment from school staff, parents, and community members.

Checklist for Excellence in School-to-Work Transition

The items below are based on best practices of the teachers and researchers in Program 7. The checklist can be used to look at current practices in your school and to jointly set new goals with parents and community groups.

Vision of Learning

- ☐ Meaningful learning and work experiences for students and school staff
- ☐ Students encouraged to make decisions about their learning and to assess their own performance
- ☐ Restructuring to promote learning in and out of school
- ☐ High expectations for learning for all students
- ☐ A community of problem solvers in the classroom and in the school
- ☐ Teachers and administrators committed to achieving the national education goals

Curriculum and Instruction

- ☐ Identification of core concepts
- ☐ Curriculum that calls for a comprehensive repertoire of learning and assessment strategies
- ☐ Collaborative teaching and learning involving student-generated questioning and sustained dialogue among students and between students and teachers
- ☐ Teachers assessing to build new information on student strengths
- ☐ Authentic tasks in the classroom such as solving everyday problems, collecting and analyzing data, investigating patterns, and keeping journals
- ☐ Opportunities for students to engage in learning and work out of school with community members
- ☐ Homework that is challenging enough to be interesting but not so difficult as to cause failure
- ☐ Assessments and learning tasks that respect multiple cultures and perspectives
- ☐ A rich learning environment with places for children to engage in sustained problem solving and self assessment
- ☐ Instruction that enables children to develop an understanding of the purposes and methods of learning tasks and assessment

Assessment and Grouping

- ☐ Assessment that informs and is integral to instruction
- ☐ Assessment sessions that involve the teacher, student, and parents
- ☐ Performance-based assessment such as portfolios that include drafts, journals, projects, and problem-solving logs
- ☐ Multiple opportunities to be involved in heterogeneous groupings, especially for students at risk
- ☐ Public displays of student work and rewards
- ☐ Methods of assessing group performance
- ☐ Group assessments of teacher, class, and school

Staff Development

- ☐ Opportunities for teachers to attend conferences and meetings on school-to-work transition
- ☐ Teachers as researchers, working on research projects
- ☐ Teacher or school partnerships/projects with colleges and universities
- ☐ Opportunities for teachers to observe and coach other teachers
- ☐ Opportunities for teachers to try new practices in a risk-free environment

Involvement of the Community and Business

- ☐ Community members' and parents' participation in learning environments as experts, aides, guides, or tutors
- ☐ Active involvement of community members on task forces for curriculum, staff development, assessment, school to work, and other areas vital to learning
- ☐ Opportunities for teachers and other school staff to visit informally with community members to discuss the life of the school, resources, and greater involvement of the community

Policies for Students at Risk

- ☐ Students at risk integrated into the social and academic life of the school
- ☐ Policies/practices to display respect for multiple cultures and role models
- ☐ A culture of fair assessment practices

SECTION 5

Biographical Information

Videoconference Participants

Sue E. Berryman directs the Institute on Education and the Economy at Teachers College, Columbia University, where she synthesizes research in special background papers, speeches, interviews, and testimony to federal and state policymakers, corporate executive, educational practitioners, and the press and electronic media. She was one of eight technical experts asked to brief the governors, White House staff, and top Department of Education officials on national goals and assessment, and is one of seven judges for New York State's Baldridge Awards. Dr. Berryman has been a member of national advisory boards and an invited speaker at conferences on education and employability, has served on several National Academy of Science and National Academy of Engineering panels, and is a member of a panel to advise the National Science Foundation on issues of policy and research. A graduate of Pomona College, Berryman received graduate training in Anthropology from the University of Pennsylvania and a Ph.D. from the Social Relations Department of Johns Hopkins University.

Linda Cate, Ph.D., is the newly appointed Director of the Bureau for Vocational Education of the Wisconsin Department of Public Instruction. The Bureau is responsible for administering federal Vocational Education funding, the high school equivalency program, and vocational student organization. As director, Dr. Cate provides policy direction, leadership, and overall management of Vocational Education and the school-to-work transition initiative which includes Tech Prep and Youth Apprenticeship. Before her appointment, she served as the Education for Employment Consultant as well as the Business Education Consultant. Dr. Cate, a graduate of the University of Tennessee, received her doctorate from the University of Wisconsin in Madison.

Judson Hixson is senior associate director of Technology and Information at the Midwest Regional Center for Drug-Free Schools and Communities. Before joining the Center, he directed NCREL's professional prepration and development program, was administrative coordinator for the Chicago Public Schools, served as educational director for the Chicago Urban League, and was an on-loan consultant to the National Urban League for educational policy development and congressional relations. He has teaching experience at all grade levels as well as experience in university administration. Mr. Hixson received a masters degree in Educational Psychology and is a Ph.D. candidate at the University of Chicago.

Jeff P. Howard is president of the Efficacy Institute, a non-profit organization that provides in-service training and consulting services to urban public school systems in such cities as Atlanta, Boston, Chicago, Detroit, Kansas City, Los Angeles, New York, and Peoria. Howard, a psychologist with a doctorate in Social and Clinical Psychology from Harvard University, oversees the institute's efforts to address intellectual development and the problems associated with managing diverse school populations. He is committed to achieving the institute's mission to promote the development of all children, especially children of color, and to help teachers put into operation the idea that **all children can learn**. Toward these goals, the institute has developed curricula for elementary and high school teachers to instruct their students in the process of development.

Diane Jackson has been an educator, trainer, and consultant with the Detroit Public Schools for 13 years. Ms. Jackson is a certified trainer for the Efficacy Institute in Lexington, Massachusetts, and is the efficacy coordinator for the district. Her professional affiliations include: Phi Delta Kappa, National Black Child Development Institute, Inc., Association for Supervision and Curriculum Development, Detroit Storytelling Network, Metropolitan Detroit Reading Council, Michigan Reading Association, and the National Association of Female Executives. She earned a B.S. and M.A. in Education from Wayne State University, where she majored in Special Education and Instructional Technology. Currently, she is in an Educational Specialist Program, majoring in curriculum development.

Beau Fly Jones is senior researcher and director of Curriculum, Instruction, and Assessment at the North Central Regional Educational Laboratory. Dr. Jones holds a Ph.D. in educational psychology from Northwestern University. She has expertise in the areas of cognitive learning and effective comprehension instruction. Before becoming a member of the NCREL staff, Dr. Jones served as special projects coordinator for the Chicago Public Schools and was a developer for their instructional materials in several areas, particularly social studies and reading. Since her arrival at NCREL in 1984, she has published over 25 articles and books on dimensions of thinking, cognitive instruction, and applications of technology to curriculum development. In 1990, she was project director for NCREL's national videoconference series, *Restructuring to Promote Learning in America's Schools*.

Charles J. Law, Jr. is a nationally recognized writer, speaker, and consultant specializing in Tech Prep, school-to-work transition, vocational education, and integrating academic and vocational education. Educated as a vocational agriculture teacher at North Carolina State University, Dr. Law holds an Ed.D. in Educational Administration from Duke University. His work experience includes serving as a vocational agriculture teacher and science teacher at the secondary level, community college administrator, professor of adult and community college education, state director of vocational education, and executive director of a regional educational laboratory. Currently, he is working with both state and local educational agencies on the implementation of Tech Prep, and is writing on the need for a set of educational principles or pedagogy to identify the connections between Tech Prep and other educational restructuring processes.

Karmaleta C. (KC) Mosley is a vice president at the Harris Trust and Savings Bank, Chicago, Illinois. She is currently serving as an executive consultant and project manager for Harris Bank's Total Customer Focus quality management strategy and implementation. Mosley previously served as the curriculum/program designer and training manager for the bank's cash management college training program and subsequently as the Midwest Region cash management sales manager. As a corporate volunteer, she has worked as a resource advisor to Harris Local School Council members, a Youth Motivation speaker, and corporate coordinator and field advisor for the bank's Junior Achievement program. She is a founding member and has been an active volunteer for the Efficacy school program since 1986. Harris Bank professionals teach the efficacy principles to sixth grade students at Daniel Hale Williams School, 2710 S. Dearborn in Chicago.

Richard Van Scotter is director of education for Junior Achievement, Inc. and is a contributing writer of Junior Achievement's *Applied Economics* textbook and study guide. He is the co-author of *Social Foundations of Education*, a college textbook in its third edition, and author of *Public Schooling in America*. Van Scotter serves on the Citizen's Goals Committee in Colorado Springs, a group responsible for designing and implementing a community plan to restructure K-12 education. He has taught classes at the high school and collegiate levels and was a writer and workshop director for Social Issues Resource Series (SIRS), an educational publishing company. A graduate of Beloit College in Wisconsin, Van Scotter received a master's degree from the University of Wisconsin and a Ph.D. from the University of Colorado.

Gari Spagnoletti is supervisor of vocational education and local vocational education coordinator for the Appleton Area School District. Mr. Spagnoletti, one of five directors from Wisconsin to develop and implement the Education for Employment model, has 20 years of experience in vocational education, including five years as a high school principal. During this time, he developed a Tech Prep model for the Appleton Area School District and Fox Valley Technical College, several pilot programs for multi-district cooperation, as well as pilot programs in CAD/CAM interface, courses in robotic applications, and computer applications in both business and technical education. A graduate of the University of Wisconson-Stout, Spagnoletti has served on Vocational Education Evaluation Teams for the Wisconsin Department of Education, and has given presentations on vocational education, most recently at the National Tech Prep Network in Dallas. He is a doctoral candidate at UW-Stout.

William R. Watts is principal of William Howard Taft High School in Chicago, Illinois, where he instituted outcome-based curriculum, instructional, assessment, credentialing, and placement programs. In addition, he restructured Taft into five schools-within-a-school, each with its own career theme and set of business partners. Watts, who received graduate degrees from Loyola University in Chicago and has done post-doctoral work in special education at Chicago State University, works with Educational Service Centers and school districts as a trainer/consultant on such topics as student motivation, teacher supervision, and management of student service programs. During his career, he been a teacher, guidance counselor, director of guidance services, and assistant principal.

SECTION 6

Important Resources

Books and Articles

Berryman, S. & Bailey, T. (in press). Changing work, changing schools. Extremely readable explanation of important changes in the world of work and in schools, and the significance of the consistency that exists between the two. Introduces the educational possibilities of the "cognitive apprenticeship."

Caine, R. N. & Caine, G. (1991). Making connections: Teaching and the human brain. Alexandria, VA: Association for Supervision and Curriculum Development. Presents key findings from studies of the human brain and their applicability to teaching and learning.

Hull, D. & Parnell, D. (Eds.). (1991). Tech Prep associate degree: A win/win experience. Waco, Texas: Center for Occupational Research and Development. A description of Tech Prep, its history, and its possibilities and a series of case studies of successful programs.

Johnston, W. B. & Packer, A. H. (1987). Work force 2000: Work and workers in the 21st century. Indianapolis, IN: Hudson Institute. This study was an attempt to first present a description of a radically different workforce, which includes more women and minority workers—that would have different needs and require different skills.

National Center on Education and the Economy. (1990). America's choice: High skills or low wages! The report of the commission on the skills of the American workforce. Rochester, NY: Author. A relatively brief and well documented presentation of the reasons for America's slipping hold on international markets. Includes a series of recommendations for improvement.

Raizen, S. A. (1989). Reforming education for work: A cognitive science perspective. Berkeley, CA: National Center for Research in Vocational Education. A clear and informative treatise on the findings of cognitive science and their application to formal education.

Resnick, L. B. (1987). Learning in school and out. Educational Researcher, 16 (9), 13-20. A seminal article that pointedly describes the inconsistencies between learning in school and learning in the the workplace.

SECTION 7

Glossary

Accountability A systematic process of providing relevant information to determine whether the public educational system is meeting the expectations established for it.

Assessment An evaluation procedure that requires pupils to perform a task which approximates an outcome as closely as possible within established requirements of economy, validity, and reliability.

Authentic Assessment An evaluation procedure which requires pupils to demonstrate specific skills and competencies which realistically represent problems and situations likely to be encountered in daily life.

Certificate of Mastery A certificate issued on the basis of successful completion of examinations covering the outcomes which have been established as crucial for work and academic pursuits beyond the tenth grade.

Higher Order Thinking Skills Lauren Resnick (University of Pittsburg) lists several characteristics:

- non-algorithmic—the path of action is not fully specified in advance
- complex—the total path is not 'visible' from any single vantage point
- multiple solutions
- nuanced judgment
- application of multiple criteria, which sometimes conflict with one another
- uncertainty—not everything that bears on the task at hand is known
- self-regulation of the thinking process
- imposing meaning or finding structure in apparent disorder
- effortful—considerable mental work required

Interdisciplinary Student assessment tasks/projects which require the integration of traditionally discrete curricular areas.

Outcomes Descriptions of the performances of complex student behaviors. The behaviors typically require the integration of knowledge through the application of higher order thinking to the solution of problems students might likely encounter in daily life. Outcomes are meaningful to students in that their performance has value and meaning beyond the valuation process.

Outcome-Based Education Integrated system of educational programs which assures alignment of specified learner outcomes, instruction processes, and student assessment and reporting systems.

Terms provided by the Bureau for Achievement Testing, Wisconsin Department of Public Instruction.

SECTION 8

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Product Order Form

Qty.	Price	Order #	Title/Author
____	$300	RES 091	**Restructuring to Promote Learning in America's Schools** (1990). A series of nine, 2-hour videotapes and guidebooks. Produced by NCREL and PBS. ■ The New Definition of Learning: The First Step for School Reform ■ The Thinking Curriculum ■ The Collaborative Classroom: Reconnecting Teachers and Learners ■ Multidimensional Assessment: Strategies for the Classroom ■ Schools as Learning Communities ■ Many Roads to Fundamental Reform: Getting Started ■ Many Roads to Fundamental Reform: Continuing the Journey ■ The Meaning of Professional Development in the 21st Century ■ Reconnecting Students at Risk to the Learning Process Individual videotape/guidebook sets are available for $35. Please specify which videoconference you want.
____	$10	HST 703	**Dimensions of Thinking: A Framework for Curriculum and Instruction** (1988). Robert J. Marzano, Ronald S. Brandt, Carolyn Sue Hughes, Beau Fly Jones, Barbara Z. Presseisen, Stuart C. Rankin, and Charles Suhor.
____	$10	HST 705	**Strategic Teaching and Learning: Cognitive Instruction in the Content Areas** (1987). Beau Fly Jones, Annemarie Sullivan Palincsar, Donna S. Ogle, and Eileen Glynn Carr.
____	Free	PB-14	**NCREL Policy Briefs—Tech Prep: Filling a Vital Niche in America's Education Strategy (1991).**

To order these products, send a check or purchase order to:

Publications Department
North Central Regional Educational Laboratory
1900 Spring Road, Suite 300
Oak Brook, IL 60521

To receive a FREE catalog listing all NCREL products, write to the above address or call Cheryl May at 708/571-4700.

SCHOOLS THAT WORK
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Where multiple choices occur, please circle the most appropriate response.

Which of the following best describes your affiliation?

School	School District	State Ed. Agency	Intermediate Service Agency	Other
principal	superintendent	administrator	director	teacher educator
teacher	AOD coordinator	staff	staff	preservice teacher
parent	board member	board member	board member	community member
AOD coordinator	other (describe):	other (describe):	other (describe):	other (describe):
counselor	_____	_____	_____	_____

How did you learn about the videoconference? _____

What is your purpose in watching the videoconference? staff development preservice education
community forum other (describe):_____

Did you watch last year's NCREL/PBS Series: *Restructuring to Promote Learning in America's Schools?* Yes No

Where are you watching the videoconference? _____

This location is: rural suburban urban

Are you watching the program via satellite? cable channel? videotape? other?_____

Please rate the following descriptions of the videoconference on a scale of 1 - 5.
Use these decriptors as guidelines, and circle the number that matches your assessment of that component.

1 = very poor; needs considerable improvement (2 = somewhere between 1 & 3)
3 = average; acceptable; "okay" (4 = somewhere between 3 & 5)
5 = outstanding; superior N/A = not applicable

		poor		average		outstanding	
Site Facilities:	a) room arrangement; accessibility	1	2	3	4	5	
Seating Arrangements:	a) comfortable; clear view of the screen	1	2	3	4	5	
Telecast:	a) picture; sound; volume	1	2	3	4	5	
Facilitator	a) conducted pre-conference activities	1	2	3	4	5	N/A
	b) conducted post-conference activities	1	2	3	4	5	N/A
	c) answered questions; solved problems	1	2	3	4	5	N/A
Print Materials	a) organized; easy to read	1	2	3	4	5	N/A
	b) clear language; right amount of material	1	2	3	4	5	N/A
	c) enhanced; supported program content	1	2	3	4	5	N/A
	d) written to be reread; shared with others	1	2	3	4	5	N/A
	e) useful addition to a professional development library	1	2	3	4	5	N/A

(please turn over)

Please rate the following descriptions of the videoconference on a scale of 1 - 5.

Use these descriptors as guidelines, and circle the number that matches your assessment of that component.

1 = very poor; needs considerable improvement
3 = average; acceptable; "okay"
5 = outstanding; superior

(2 = somewhere between 1 & 3)
(4 = somewhere between 3 & 5)
N/A = not applicable

		poor		average		outstanding	
Video Program:	a) topic was relevant to my needs; interests	1	2	3	4	5	
	b) videoconference changed my knowledge base	1	2	3	4	5	
	c) presented quality information	1	2	3	4	5	
	d) presented an adequate amount of information	1	2	3	4	5	
	e) presented specific examples of school-to-work transition	1	2	3	4	5	
	f) presented importance of linking research to classroom practice	1	2	3	4	5	
	g) balanced discussion between research and field examples	1	2	3	4	5	
	h) presented how community involvement can be used to provide support in the classroom	1	2	3	4	5	
	i) program was motivating	1	2	3	4	5	
National Education Policy:	a) video and print materials helped explain the national education goals	1	2	3	4	5	N/A
	b) program discussed how research can help meet the national education goals	1	2	3	4	5	N/A
	c) program gave examples of linking districts and state educational goals with the national education goals	1	2	3	4	5	N/A
	d) program gave useful examples for setting up school and/or community forums	1	2	3	4	5	N/A
Video Program Format:	a) overall organization and flow of program	1	2	3	4	5	
	b) host moderated program in an even manner	1	2	3	4	5	
	c) segment on classroom teacher	1	2	3	4	5	
	d) segment on school and community	1	2	3	4	5	
	e) panel discussion and audience interaction	1	2	3	4	5	

Recommendations: